FMP, TTI, COVID-19, WTF? 🤔
Making Sense of Performance Metrics

Ire Aderinokun
#PerfMatters 2020

Why is performance important?

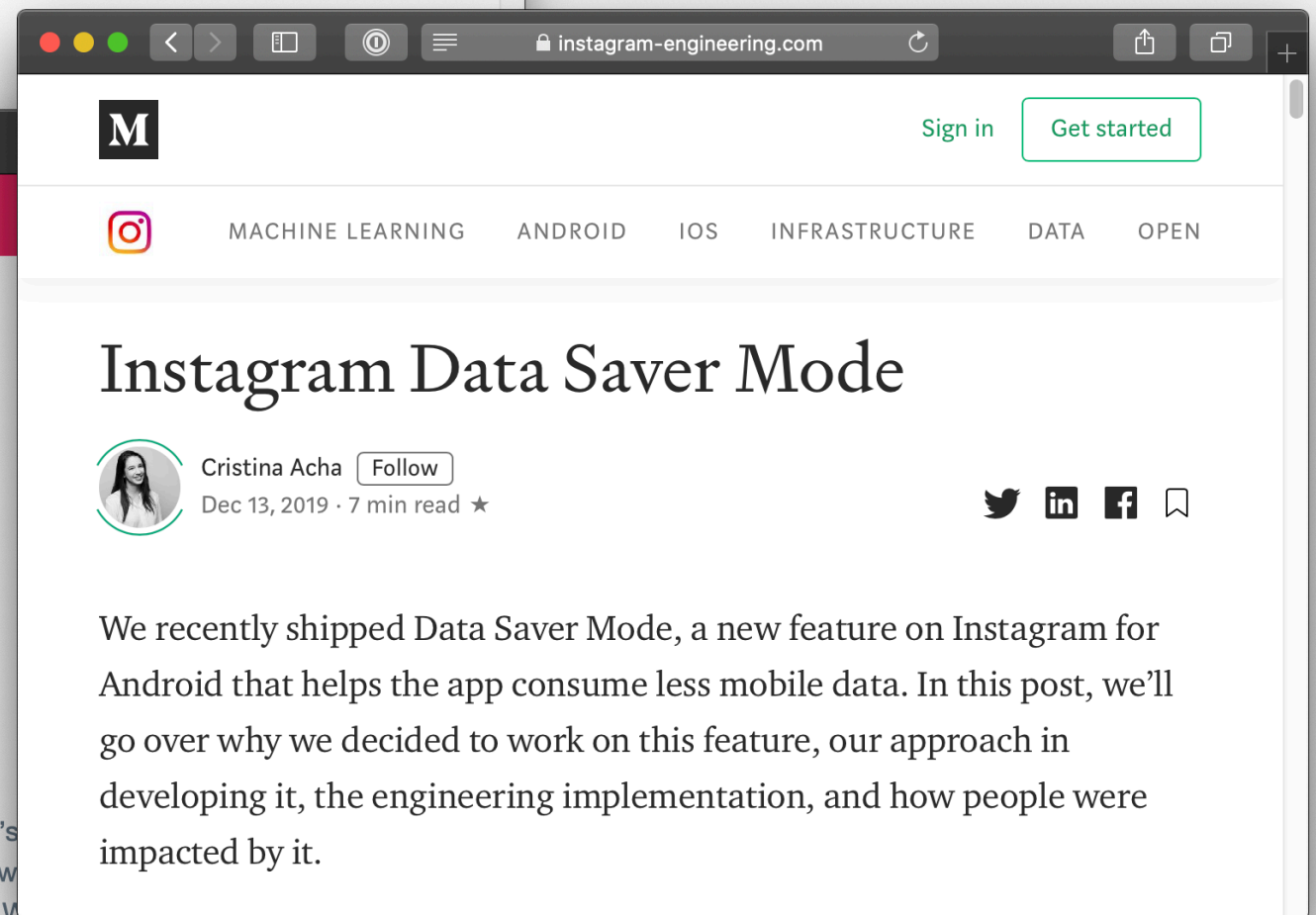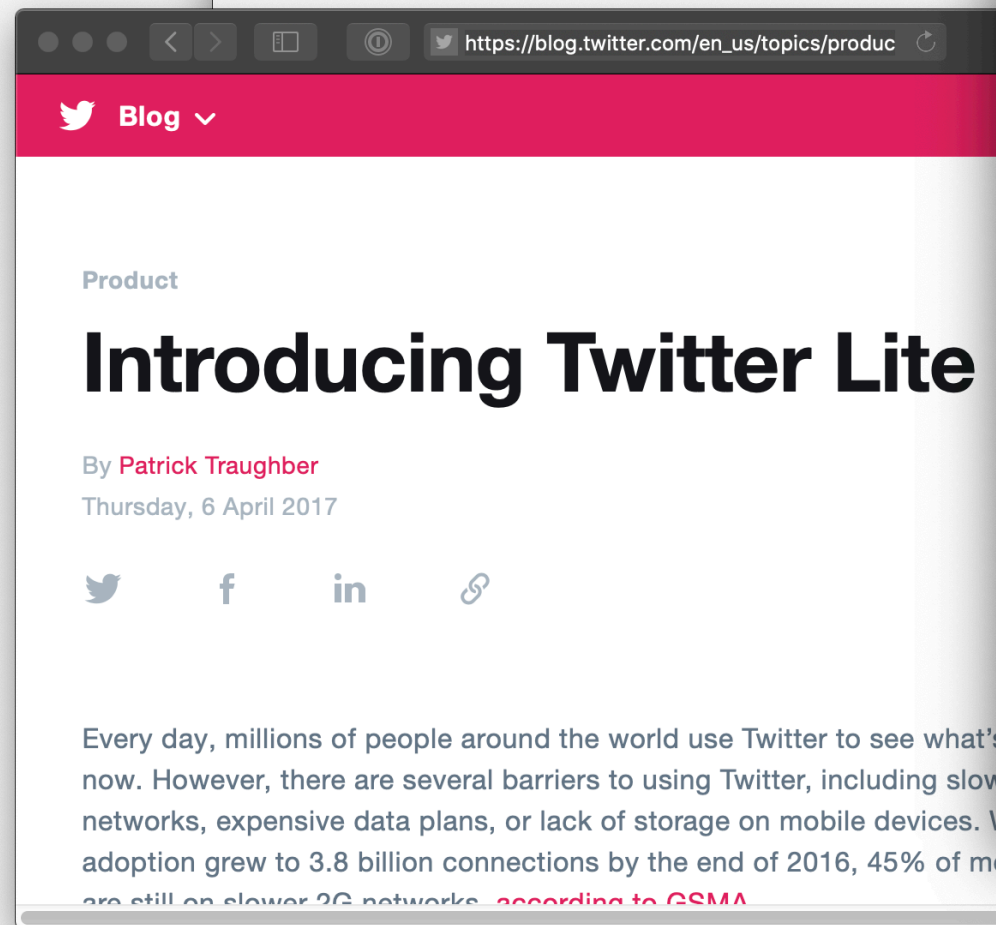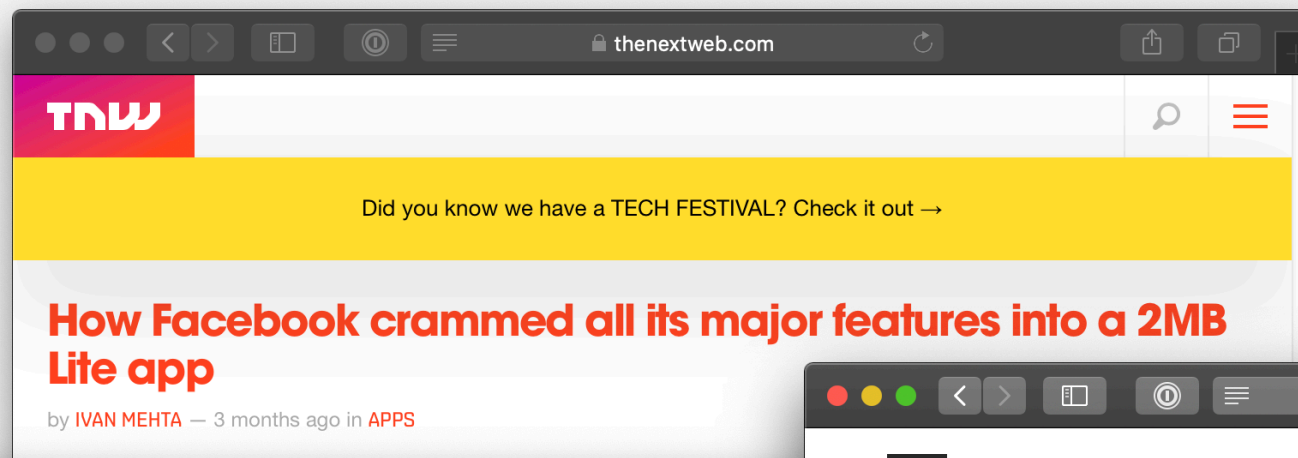In Nigeria, the average cost of 1GB of data is N850, **3% of minimum wage**.

That's more than **1 hour of work**🤯

https://www.ispreview.co.uk/index.php/2019/03/uk-ranked-136th-out-of-230-countries-for-its-high-mobile-data-price.html

In the US, minimum wage employees have to work almost **2 hours** to earn enough for 1GB of mobile data 🤯

Having a performant website is a **competitive advantage** 😎

TNW

Did you know we have a TECH FESTIVAL? Check it out →

How Facebook crammed all its major features into a 2MB Lite app

by IVAN MEHTA — 3 months ago in APPS

Blog ⌄

Product

Introducing Twitter Lite

By Patrick Traughber
Thursday, 6 April 2017

Every day, millions of people around the world use Twitter to see what's
now. However, there are several barriers to using Twitter, including slow
networks, expensive data plans, or lack of storage on mobile devices. W
adoption grew to 3.8 billion connections by the end of 2016, 45% of mobile connections
are still on slower 2G networks, according to GSMA

M

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Instagram Data Saver Mode

Cristina Acha   Follow
Dec 13, 2019 · 7 min read ★

We recently shipped Data Saver Mode, a new feature on Instagram for Android that helps the app consume less mobile data. In this post, we'll go over why we decided to work on this feature, our approach in developing it, the engineering implementation, and how people were impacted by it.

Having a performant website is just like having **good service** in the physical world..

...but your customers are less patient 😡

Users are **90%** more likely to abandon a page that takes up to **5 seconds** to load

👋 **Ire** Aderinokun

💻 **Frontend Developer** &
Cofounder, BuyCoins

🇳🇬 From **Lagos**, Nigeria

🇬🇧 On lockdown in **London**, UK

Google Web Expert &
Cloudinary Media Expert

Writer, **bitsofco.de**

What does *performant actually mean* for your site?

Browser requests page

Page fully loaded

15 seconds 😡

Browser requests page

Page fully loaded

🤔

The **onLoad** event captures when the document and all its resources have finished loading.

load

Server responds

```javascript
var start = Date.now();

window.addEventListener('load', function() {

    var end = Date.now();

    var loadTime = end - start;

});
```

The **domContentLoaded** event captures when the Document Object Model has been constructed.

load

Server responds   domContentLoaded

Server responds   domContentLoaded   load

Is there **content**?

Is the content **meaningful**?

Is the content **interactable**?

Are interactions **smooth**?

web.dev/user-centric-performance-metrics

Is there **content**?

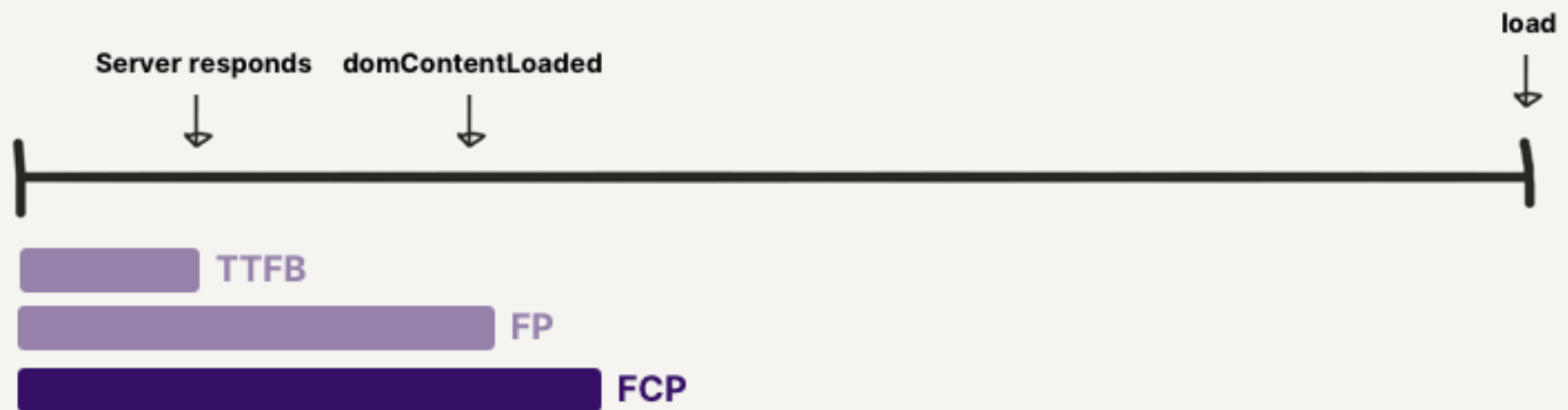*Time to First Byte*

First Paint

First Contentful Paint

Time to First Byte measures the time from when the browser requests a page to the first byte of the page being received.

First Paint measures the time when the first pixel is painted on the screen.

First Contentful Paint measures the time when the first piece of content from the DOM is rendered.

Is the content **meaningful**?

Largest Contentful Paint

Visually Complete

Speed Index

Largest Contentful Paint, a successor to First Meaningful Paint, measures the time when the largest piece of content within the viewport is rendered.

👎 First Meaningful Paint

👍 Largest Contentful Paint

Visually Complete measures the time taken for the content within the viewport to be fully rendered.

Speed Index is a score of how quickly visual content is rendered within the viewport.

Is the content **interactable**?

First Input Delay & Max Potential First Input Delay
*Total Blocking Time*
Time to Interactive

First Input Delay measures the delay between the time a user can attempt to interact with a part of the site, and the time that the interface is able to respond to that interaction.

Max Potential First Input Delay measures the maximum possible First Input Delay based on the duration of the longest task.
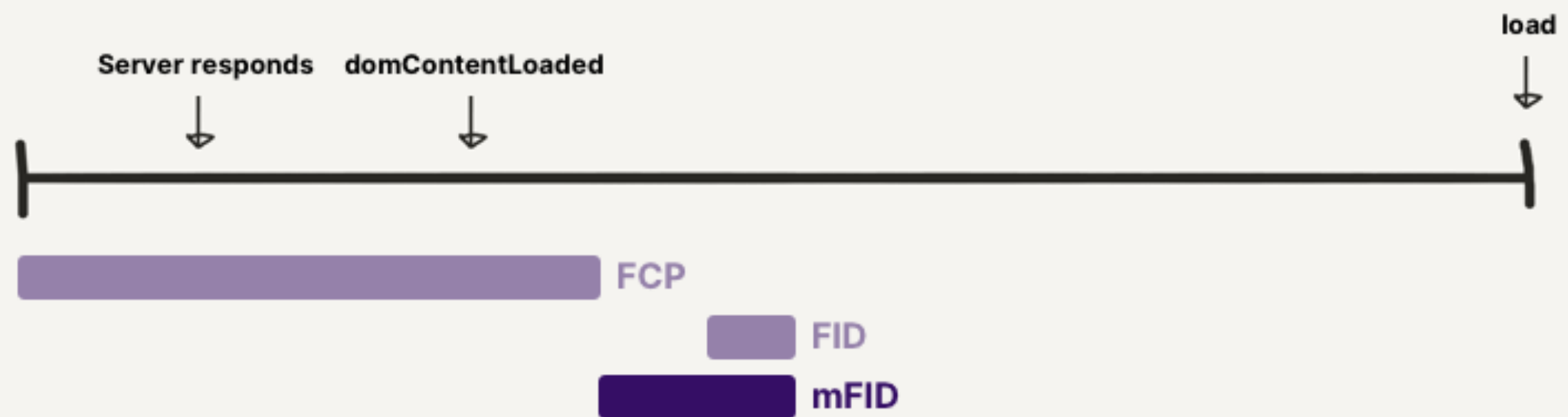
Total Blocking Time measures the total duration of Javascript tasks between the First Contentful Paint and Time to Interactive.
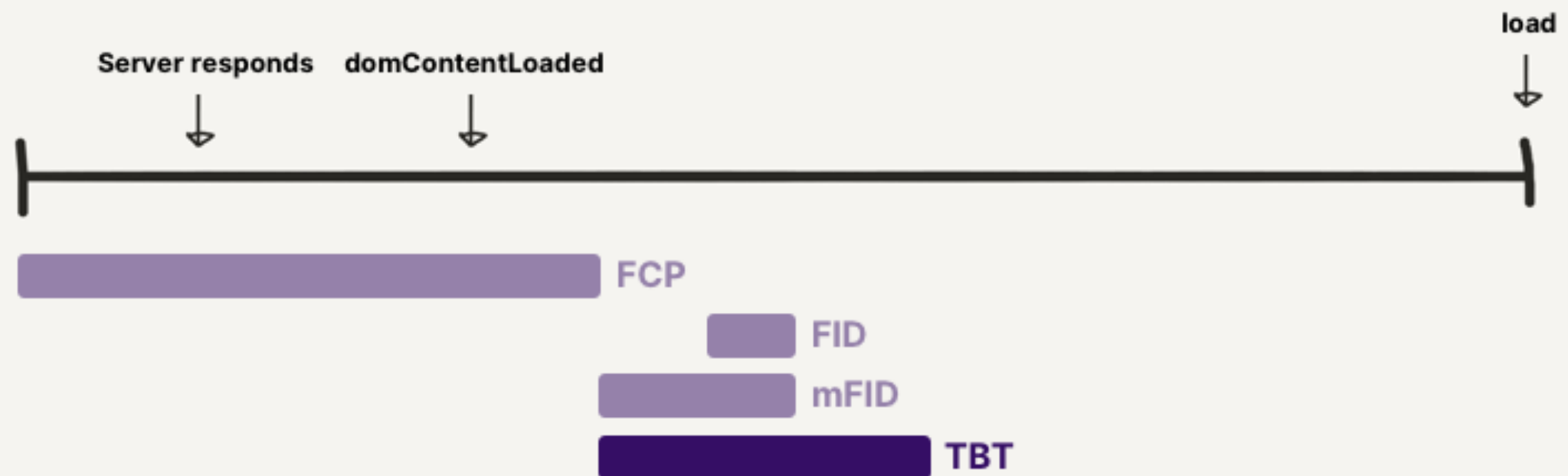
Time to Interactive measures the time when the main thread has had up to 5 seconds with no network activity or JavaScript tasks.
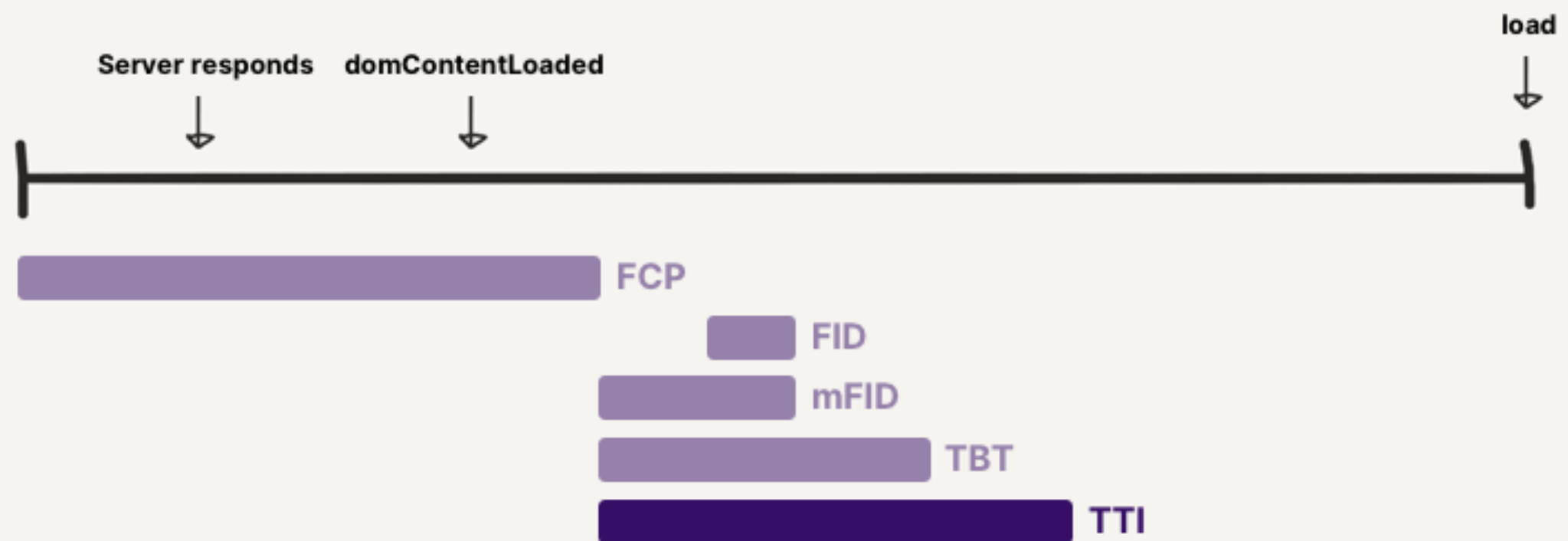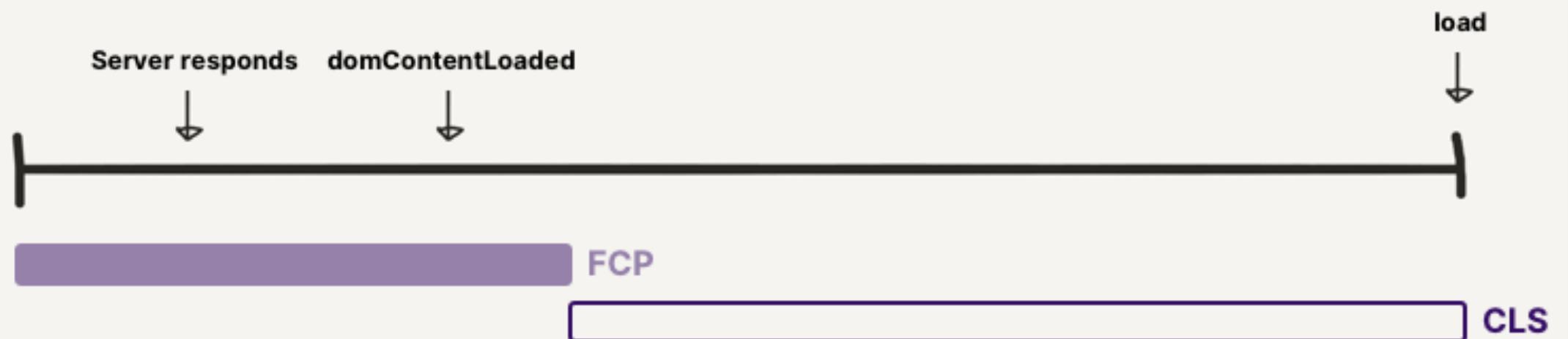
Are interactions **smooth**?

Cumulative Layout Shift
Frame Rate

Cumulative Layout Shift measures the shifts in layout while a page is loading.

load

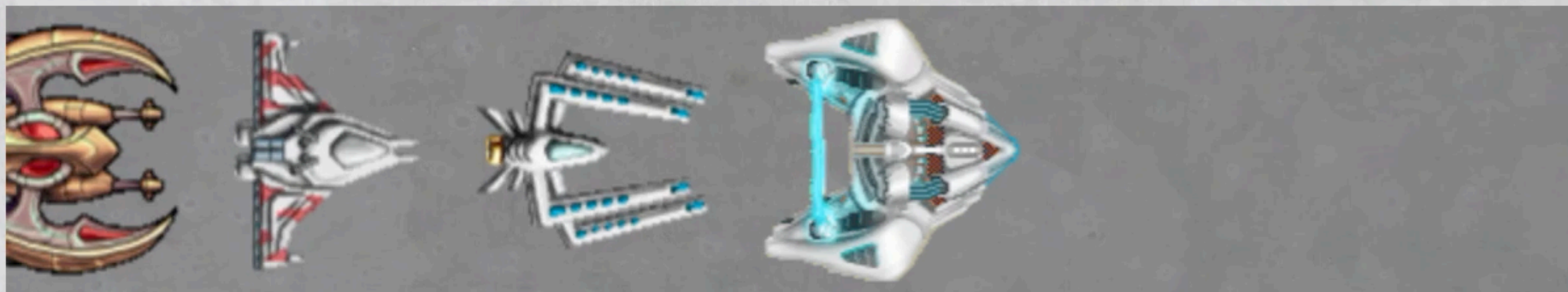Server responds   domContentLoaded

FCP

CLS

Frame rate is the rate at which the browser can produce new frames in response to interactions and/or animations.
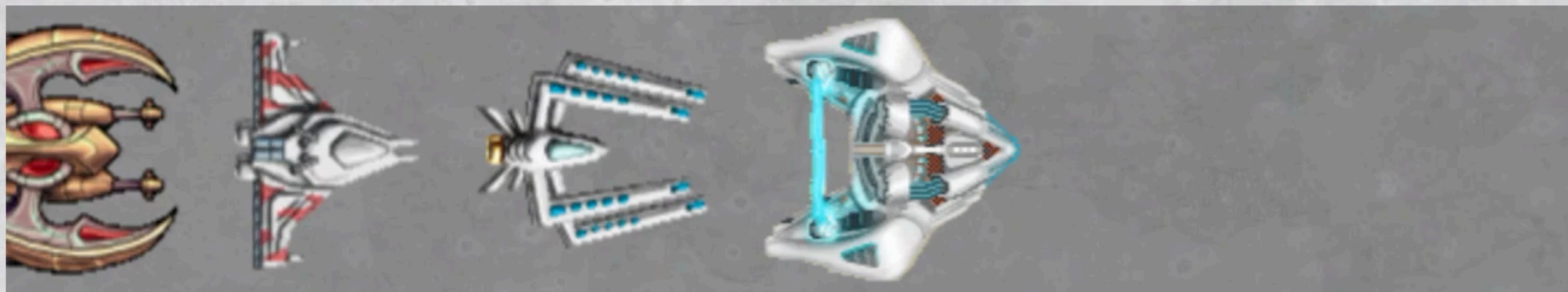
Jank Invaders

Oh noes! Our intergalactic space fleet has been infiltrated by ships of inferior framerate! Watch closely, and blast the spies to pieces as quickly as possible!

The good guys move like this:

Don't shoot those or you'll get a 10 second penalty. **The bad guys move like this**:
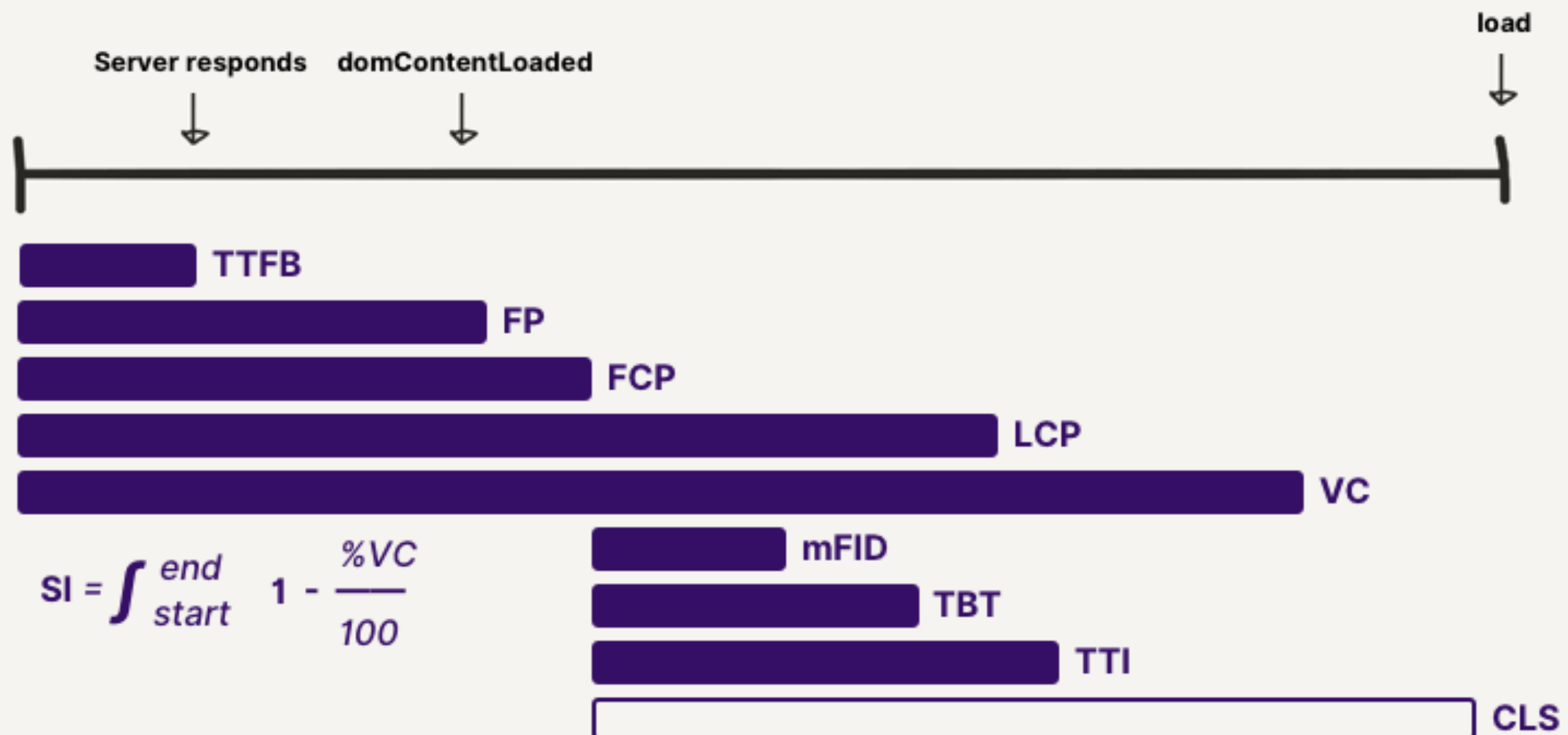
jakearchibald.github.io/jank-invaders

What does performant actually mean for *your site*?

Example: News Website 🗞️

Is there **content**?

Time to First Byte

First Paint

First Contentful Paint ✅

Is the content **meaningful**?

Largest Contentful Paint ✅

Visually Complete

Speed Index ✅

Is the content **interactable**?

First Input Delay & Max Potential First Input Delay
Total Blocking Time
Time to Interactive ✅

Are interactions **smooth**?

Cumulative Layout Shift ✅

Frame Rate

Speed Index

First Contentful Paint

Time to Interactive

Largest Contentful Paint

Cumulative Layout Shift

How do I *implement* performance metrics?
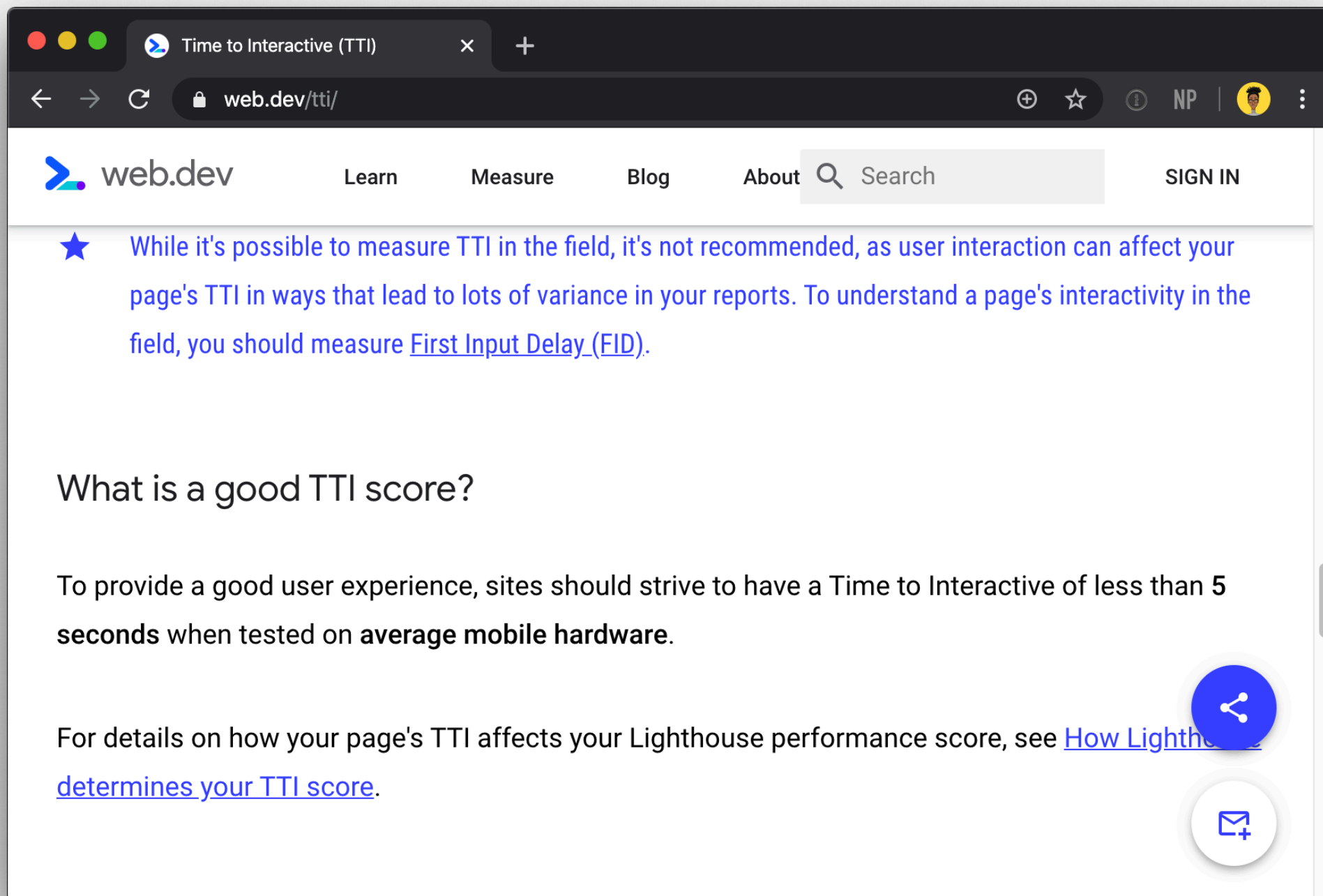
✅ Choose the **metrics**
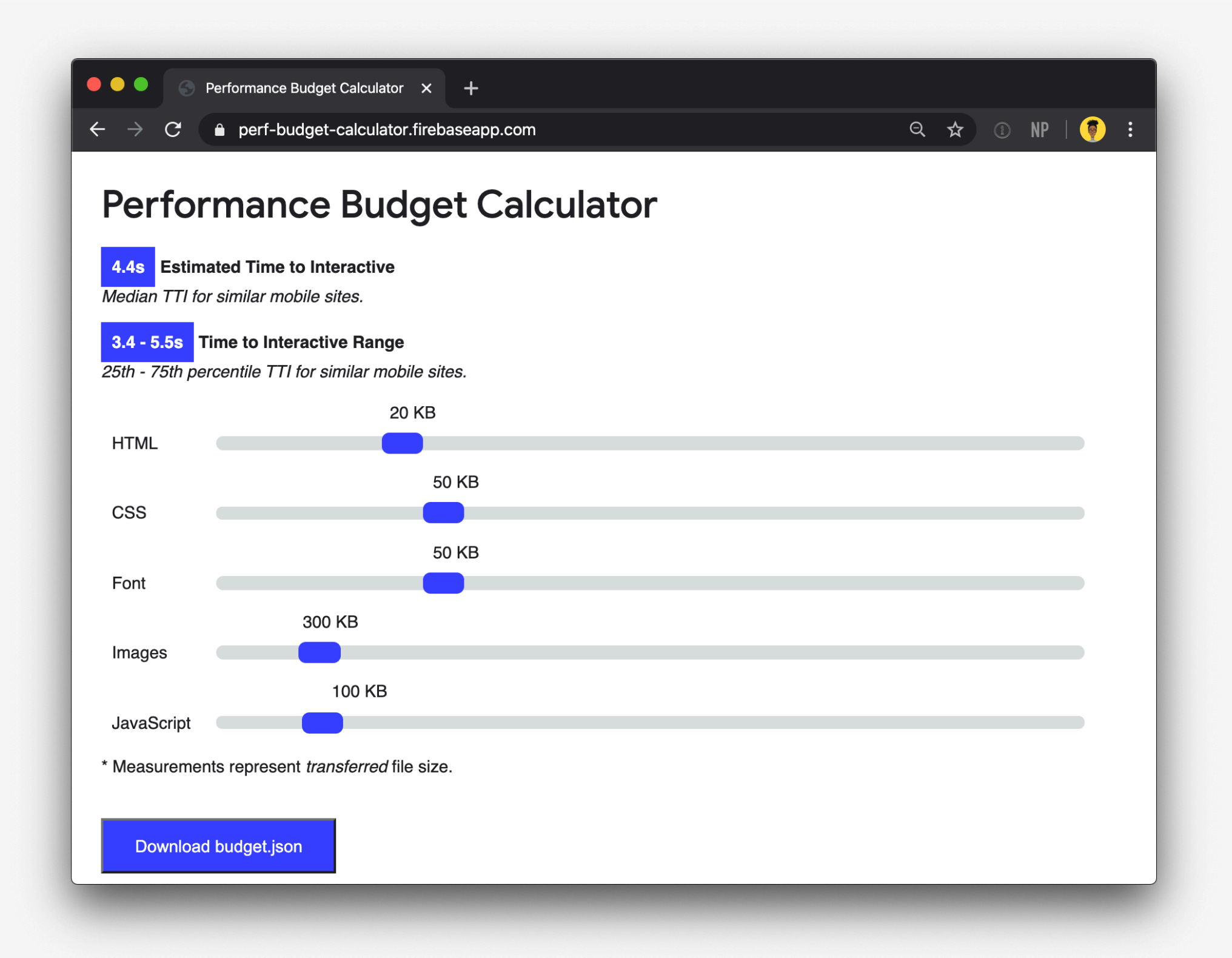
🤔 Define a **budget**

🤔 Start **measuring**

A **performance budget** defines specific values to your metrics that your site should never exceed.

Example: News Website 💸

- FCP should not exceed **1.5 seconds**

- LCP should not exceed **2 seconds**

- SI should not exceed **0.43**

- TTI should not exceed **4 seconds**

- CLS should not exceed **0.1**

web.dev/tti/

web.dev   Learn   Measure   Blog   About   Search   SIGN IN

⭐ While it's possible to measure TTI in the field, it's not recommended, as user interaction can affect your page's TTI in ways that lead to lots of variance in your reports. To understand a page's interactivity in the field, you should measure First Input Delay (FID).

What is a good TTI score?

To provide a good user experience, sites should strive to have a Time to Interactive of less than **5 seconds** when tested on **average mobile hardware**.

For details on how your page's TTI affects your Lighthouse performance score, see How Lighthouse determines your TTI score.

web.dev

Performance Budget Calculator

4.4s **Estimated Time to Interactive**

Median TTI for similar mobile sites.

3.4 - 5.5s **Time to Interactive Range**

25th - 75th percentile TTI for similar mobile sites.

20 KB

HTML

50 KB

CSS

50 KB

Font

300 KB

Images

100 KB

JavaScript

* Measurements represent *transferred* file size.

Download budget.json

perf-budget-calculator.firebaseapp.com

Use your **competitors** as a baseline/guide

i don't have to outrun the bear

i just have to outrun you !!

✅ Choose the **metrics**

✅ Define a **budget**

🤔 Start **measuring**

✅ Choose the **metrics**

✅ Define a **budget**

✅ Start **measuring**

Thank you!

🌐 Where to find me

ireaderinokun.com

bitsofco.de

@ireaderinokun

📚 Resources

web.dev/user-centric-performance-metrics

calibre.app

developers.google.com/web/tools/lighthouse

perf-budget-calculator.firebaseapp.com